

## CLAIMS

What is claimed is:

1. A method for forming an electromagnetic assembly having improved damping characteristics, the method for use with a power source including positive and negative source busses and a load including positive and negative load busses, the method comprising the steps of:

- 5 providing a first toroidal core of magnetic material having at least first and second core sections, the first toroidal core forming a first surface;  
winding a first winding about the first core section;  
winding a second winding about the second core section;  
linking opposite ends of the first winding to the positive source bus and the positive  
10 load bus;  
linking opposite ends of the second winding to the negative source bus and the negative load bus such that common mode currents traveling from the source to the load cause currents in the first core that travel in the same direction; and  
providing a second toroidal core forming a second surface and positioned relative to  
15 the first toroidal core and outside the windings such that the first and second surfaces form an air gap there between.

2. The method of claim 1 further including the step of securing the toroidal cores together.

3. The method of claim 2 wherein the step of securing includes epoxying the cores together.

5. The method of claim 3 further including the step of providing a spacer between the first and second cores prior to epoxying.

6. The method of claim 2 wherein the first toroidal core forms a space and wherein the step of securing further includes the step of filling the space with the epoxy. 6

7. The method of claim 6 wherein the second toroidal core forms a space and wherein the step of securing further includes filling the space in the second toroidal core with epoxy.

8. The method of claim 6 further including the step of forming a mounting aperture through the epoxy in the space.

9. The method of claim 1 wherein the step of providing the first core includes the step of wrapping a ribbon of metallic material into a torrid form.

10. The method of claim 9 wherein the step of providing the first core further includes the step of coating the torrid form with an insulating varnish binder material.

11. The method of claim 9 wherein the step of providing the second core includes the step of wrapping a ribbon of metallic material into a torrid form.

12. The method of claim 1 wherein the step of providing the first torrid core further includes the steps of forming the core about an axis where the first surface is perpendicular to the axis.

13. The method of claim 1 wherein the step of providing the first toroidal core includes providing the core wherein the first surface is an internal surface and wherein the step of providing the second toroidal core includes providing the second core within the first core such that the second surface faces the first surface.

14. The method of claim 1 wherein the step of providing the second toroidal core includes providing the second core about the first core so that the first core is within the second core.

15. A method for forming an electromagnetic assembly having improved damping characteristics, the method for use with a power source including positive and negative source busses and a load including positive and negative load busses, the method comprising the steps of:

- 5        wrapping a ribbon of metallic material providing a first toroidal core of magnetic material having at least first and second core sections, the first toroidal core forming a first surface;
- winding a first winding about the first core section;
- winding a second winding about the second core section;
- 10        linking opposite ends of the first winding to the positive source bus and the positive load bus;
- linking opposite ends of the second winding to the negative source bus and the negative load bus such that common mode currents traveling from the source to the load cause currents in the first core that travel in the same direction;
- 15        providing a second toroidal core forming a second surface; and
- positioning the second core relative to the first toroidal core and outside the windings such that the first and second surfaces form an air gap there between.

16. The method of claim 15 wherein the step of providing the second toroidal core includes wrapping a ribbon of metallic material into a torrid form.

17. The method of claim 15 wherein the step of positioning includes securing the first and second cores together.

18. The method of claim 17 wherein the step of securing includes epoxying the cores together.

19. The method of claim 15 wherein the step of positioning includes providing a spacer between the first and second cores.

20. The method of claim 15 wherein the step of providing the first core further includes the step of coating the torrid form with an insulating varnish binder material.

21. The method of claim 15 wherein the step of providing the first torrid core further includes the steps of forming the core about an axis where the first surface is perpendicular to the axis.

22. A method for forming an electromagnetic assembly having improved damping characteristics, the method for use with a power source including positive and negative source busses and a load including positive and negative load busses, the method comprising the steps of:

- 5           forming a first toroidal core of magnetic material about an axis wherein the first core includes at least first and second core sections, the first toroidal core forming a first surface substantially perpendicular to the axis;
  - winding a first winding about the first core section;
  - winding a second winding about the second core section;
- 10          linking opposite ends of the first winding to the positive source bus and the positive load bus;
  - linking opposite ends of the second winding to the negative source bus and the negative load bus;
  - providing a second toroidal core forming a second surface; and
- 15          positioning the second core relative to the first toroidal core and outside the windings such that the first and second surfaces form a gap there between.

23. The method of claim 22 wherein the step of positioning includes the step of providing a spacer between the first and second toroidal cores.

24. The method of claim 22 further including the step of filling the gap with epoxy.